TABLE FOR CALCULATING CENTRIFUGAL FORCE

Contributed by W. H. Herschel

The common formula for centrifugal force is $F = 0.000341\ WRn^2$, in which F = centrifugal force, in pounds; W = weight of revolving mass in pounds; R = mean radius of revolving mass in feet; and n = revolutions per minute. By making C = centrifugal force of one pound one inch from axis, we get $C = 0.000028416\ n^2$, which constant has been calculated and tabulated below. Then $F = WrC$; r is in inches in this formula, and C is found in the table.

n	C	n	C	n	C	n	C	n	C
50.0	0.07104	75	0.15984	125	0.44400	175	0.87024	255.0	1.8478
50.5	0.07247	76	0.16413	126	0.45113	176	0.88021	257.5	1.8841
51.0	0.07391	77	0.16848	127	0.45832	177	0.89024	260.0	1.9209
51.5	0.07537	78	0.17288	128	0.46557	178	0.90033	262.5	1.9580
52.0	0.07684	79	0.17734	129	0.47287	179	0.91047	265.0	1.9955
52.5	0.07832	80	0.18186	130	0.48023	180	0.92067	267.5	2.0333
53.0	0.07982	81	0.18644	131	0.48765	181	0.93093	270.0	2.0715
53.5	0.08133	82	0.19107	132	0.49512	182	0.94124	272.5	2.1101
54.0	0.08286	83	0.19576	133	0.50265	183	0.95162	275.0	2.1490
54.5	0.08440	84	0.20050	134	0.51023	184	0.96204	277.5	2.1882
55.0	0.08596	85	0.20530	135	0.51788	185	0.97253	280.0	2.2278
55.5	0.08753	86	0.21016	136	0.52558	186	0.98307	282.5	2.2678
56.0	0.08911	87	0.21508	137	0.53334	187	0.99367	285.0	2.3081
56.5	0.09071	88	0.22005	138	0.54115	188	1.00433	287.5	2.3488
57.0	0.09232	89	0.22508	139	0.54902	189	1.01504	290.0	2.3898
57.5	0.09395	90	0.23017	140	0.55695	190	1.02590	292.5	2.4312
58.0	0.09559	91	0.23531	141	0.56493	191	1.03664	295.0	2.4729
58.5	0.09725	92	0.24051	142	0.57298	192	1.04752	297.5	2.5150
59.0	0.09892	93	0.24577	143	0.58108	193	1.05846	300.0	2.5574
59.5	0.10060	94	0.25108	144	0.58923	194	1.06946	305.0	2.6484
60.0	0.10230	95	0.25645	145	0.59744	195	1.0805	310.0	2.7308
60.5	0.10401	96	0.26188	146	0.60571	196	1.0916	315.0	2.8196
61.0	0.10573	97	0.26737	147	0.61404	197	1.1028	320.0	2.9098
61.5	0.10748	98	0.27291	148	0.62242	198	1.1140	325.0	3.0014
62.0	0.10923	99	0.27851	149	0.63086	199	1.1253	330.0	3.0945
62.5	0.11100	100	0.28416	150	0.63936	200	1.1367	335.0	3.1890
63.0	0.11278	101	0.28987	151	0.64791	202	1.1595	340.0	3.2849
63.5	0.11458	102	0.29564	152	0.65652	204	1.1826	345.0	3.3822
64.0	0.11639	103	0.30147	153	0.66519	206	1.2059	350.0	3.4809
64.5	0.11822	104	0.30735	154	0.67391	208	1.2294	355.0	3.5811
65.0	0.12006	105	0.31328	155	0.68269	210	1.2531	360.0	3.6823
65.5	0.12192	106	0.31928	156	0.69169	212	1.2771	365.0	3.7857
66.0	0.12378	107	0.32533	157	0.70042	214	1.3013	370.0	3.8901
66.5	0.12566	108	0.33144	158	0.70928	216	1.3258	375.0	3.9960
67.0	0.12756	109	0.33761	159	0.71888	218	1.3505	380.0	4.1032
67.5	0.12947	110	0.34383	160	0.72745	220	1.3753	390.0	4.3220
68.0	0.13140	111	0.35011	161	0.73657	222	1.4005	400.0	4.5466
68.5	0.13334	112	0.35645	162	0.74575	224	1.4258	410.0	4.7767
69.0	0.13529	113	0.36284	163	0.75498	226	1.4514	420.0	5.0126
69.5	0.13726	114	0.36929	164	0.76427	228	1.4772	430.0	5.2541
70.0	0.13924	115	0.37580	165	0.77362	230.0	1.5032	440.0	5.5013
70.5	0.14124	116	0.38236	166	0.78306	232.5	1.5361	450.0	5.7542
71.0	0.14325	117	0.38899	167	0.79249	235.0	1.5693	460.0	6.0128
71.5	0.14527	118	0.39566	168	0.80201	237.5	1.6029	470.0	6.2770
72.0	0.14731	119	0.40240	169	0.81159	240.0	1.6358	480.0	6.5470
72.5	0.14936	120	0.40921	170	0.82122	242.5	1.6710	490.0	6.8227
73.0	0.15143	121	0.41604	171	0.83091	245.0	1.7057	.....	.....
73.5	0.15351	122	0.42294	172	0.84065	247.5	1.7407	.....	.....
74.0	0.15561	123	0.42991	173	0.85046	250.0	1.7760	.....	.....
74.5	0.15772	124	0.43692	174	0.86032	252.5	1.8117	.....	.....

SECTION MODULUS AND MOMENT OF INERTIA FOR ROUND SHAFTS—III

Contributed by W. H. Herschel

Diameter	Section Modulus	Moment of Inertia	Diameter	Section Modulus	Moment of Inertia	Diameter	Section Modulus	Moment of Inertia
d	$\frac{I}{c} = \frac{\pi d^3}{32}$	$I = \frac{\pi d^4}{64}$	d	$\frac{I}{c} = \frac{\pi d^3}{32}$	$I = \frac{\pi d^4}{64}$	d	$\frac{I}{c} = \frac{\pi d^3}{32}$	$I = \frac{\pi d^4}{64}$
4.50	8.9460	20.129	5.00	12.272	30.680	5.50	16.334	44.918
4.51	9.0060	20.308	5.01	12.345	30.926	5.55	16.783	46.574
4.52	9.0660	20.489	5.02	12.420	31.173	5.60	17.241	48.275
4.53	9.1263	20.671	5.03	12.493	31.423	5.65	17.707	50.022
4.54	9.1869	20.854	5.04	12.568	31.673	5.70	18.181	51.817
4.55	9.2477	20.990	5.05	12.644	31.925	5.75	18.664	53.659
4.56	9.3088	21.224	5.06	12.718	32.179	5.80	19.155	55.550
4.57	9.3702	21.411	5.07	12.794	32.434	5.85	19.654	57.490
4.58	9.4318	21.599	5.08	12.870	32.691	5.90	20.163	59.481
4.59	9.4937	21.788	5.09	12.946	32.949	5.95	20.680	61.523
4.60	9.5560	21.979	5.10	13.023	33.209	6.00	21.206	63.617
4.61	9.6184	22.170	5.11	13.099	33.470	6.10	22.284	67.965
4.62	9.6811	22.363	5.12	13.177	33.733	6.20	23.398	72.533
4.63	9.7441	22.557	5.13	13.254	33.997	6.30	24.548	77.327
4.64	9.8074	22.753	5.14	13.332	34.263	6.40	25.736	82.355
4.65	9.8709	22.950	5.15	13.410	34.530	6.50	26.961	87.624
4.66	9.9348	23.148	5.16	13.488	34.799	6.60	28.225	93.142
4.67	9.9989	23.347	5.17	13.567	35.070	6.70	29.527	98.917
4.68	10.0632	23.548	5.18	13.645	35.342	6.80	30.869	104.956
4.69	10.1279	23.750	5.19	13.725	35.615	6.90	32.251	111.266
4.70	10.1930	23.953	5.20	13.804	35.891	7.00	33.674	117.859
4.71	10.2580	24.157	5.21	13.884	36.168	7.10	35.138	124.739
4.72	10.3235	24.363	5.22	13.964	36.446	7.20	36.644	131.917
4.73	10.3892	24.570	5.23	14.045	36.726	7.30	38.192	139.399
4.74	10.4552	24.779	5.24	14.125	37.008	7.40	39.783	147.196
4.75	10.5216	24.989	5.25	14.206	37.291	7.50	41.417	155.316
4.76	10.5881	25.200	5.26	14.287	37.576	7.60	43.096	163.766
4.77	10.6549	25.412	5.27	14.369	37.863	7.70	44.820	172.557
4.78	10.7226	25.626	5.28	14.451	38.151	7.80	46.589	181.697
4.79	10.7894	25.841	5.29	14.534	38.440	7.90	48.404	191.197
4.80	10.8570	26.058	5.30	14.616	38.732	8.00	50.265	201.062
4.81	10.9250	26.275	5.31	14.699	39.025	8.10	52.174	211.305
4.82	10.9940	26.495	5.32	14.782	39.320	8.20	54.130	221.935
4.83	11.0620	26.715	5.33	14.866	39.617	8.30	56.135	232.960
4.84	11.1310	26.937	5.34	14.949	39.915	8.40	58.189	244.392
4.85	11.1990	27.160	5.35	15.034	40.215	8.50	60.292	256.239
4.86	11.2690	27.385	5.36	15.118	40.516	8.60	62.445	268.512
4.87	11.3390	27.611	5.37	15.202	40.819	8.70	64.648	281.220
4.88	11.4090	27.839	5.38	15.288	41.124	8.80	66.903	294.375
4.89	11.4790	28.067	5.39	15.373	41.526	8.90	69.210	307.985
4.90	11.5500	28.298	5.40	15.459	41.739	9.00	71.569	322.062
4.91	11.6210	28.530	5.41	15.545	42.049	9.10	73.982	336.616
4.92	11.6920	28.763	5.42	15.631	42.361	9.20	76.448	351.659
4.93	11.7630	28.997	5.43	15.718	42.674	9.30	78.968	367.190
4.94	11.8350	29.233	5.44	15.805	42.990	9.40	81.542	383.249
4.95	11.9070	29.471	5.45	15.893	43.307	9.50	84.173	399.820
4.96	11.9790	29.710	5.46	15.980	43.626	9.60	86.859	416.922
4.97	12.0520	29.950	5.47	16.068	43.946	9.70	89.601	434.567
4.98	12.1240	30.192	5.48	16.157	44.268	9.80	92.401	452.766
4.99	12.1980	30.435	5.49	16.245	44.572	9.90	95.259	471.531